

E-Cigarette Aerosol Analysis Report

Report No. : TCT161123C003-2

Date : Dec. 14, 2016

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Applicant: ALD GROUP LIMITED

Address: ALD Building, No.2 Industrial 3rd Rd., Shixin Community, Shiyuan Town,
Baoan District, Shenzhen 518108, China.

The following sample was submitted and identified by/on behalf of the client as:

Sample Name: VFIRE

Model No.: VFIRE

Atomizer: VFIRE-A

MOD: VFIRE-500

Coil: VFIRE-C

Power level in testing: Voltage/Wattage of tested sample is un-adjustable

Manufacturer: ALD GROUP LIMITED

Manufacturer Address: ALD Building, No.2 Industrial 3rd Rd., Shixin Community, Shiyuan Town, Baoan
District, Shenzhen 518108, China.

Trade Mark: ALD AMAZE

Sample Received Date: 2016.11.23

Testing Period: 2016.11.23—2016.12.14

Test Requested:

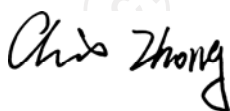
1. As specified by client, to determine the Carbonyl Compounds content(s) in the submitted sample.
2. As specified by client, to determine the Metals (Al, Cr, Fe, Ni, Sn) content(s) in the submitted sample.
3. As specified by client, to determine Nicotine consistency in the submitted sample.

Test Method: Please refer to the following page(s).

Test Result(s): Please refer to the following page(s).

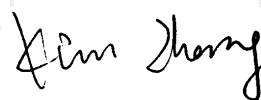
Remark: The report is to supersede test report TCT161123C003-1.

Checked by



Chris Zhong

Signed for and on behalf of TCT



Kim Zhang
Technical Manager



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Test Results:

Test Condition for Carbonyl Compounds and Metals testing:

With reference to the CORESTA RECOMMENDED METHOD N° 81 method parameter and Afnor standardization XP D90-300-3, a smoke machine was used to collect the vapor.

Puff Duration	3.0s±0.1s
Puff Volume	55mL±0.3mL
Puff Frequency	30s±0.5s
Puff of Each Group	20
Group Interval Time	300s±120s
Maximum Flow	18.5mL/s±1.0mL/s
Pressure Drop	< 50hPa
Group	5
Total Number of Puff	100
Total Duration of Vaporization	300s

The temperature and relative humidity of the test atmosphere during machine preparation and testing shall be kept within the following limits: temperature $\pm 2^{\circ}\text{C}$, relative humidity $\pm 5\%$

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1. Carbonyl Compounds Content(s)

Method: Using volumes based on the desired dilution, a measured volume of sample was combined with a volume of DNPH solution and vortexed. After sitting for 20 minutes at ambient temperature, the sample was then quenched with a sufficient amount of pyridine. An aliquot was then analyzed using the Agilent Model 1200, High Performance Liquid Chromatograph equipped with an Ultraviolet (UV) Detector operating at 365 nm.

Unit: ug/100puffs

Test Item	Formaldehyde	Acetaldehyde	Acrolein
CAS No.	50-00-0	75-07-0	107-02-8
MDL	1	1	1
LOQ	10	10	10
Sample Description	Result		
VFIRE	5.27	ND	ND

- Note:
- ug = Microgram
 - ND = Not Detected (lower than MDL)
 - MDL = Method Detection Limit
 - LOQ = Limit of Quantity
 - E-Liquid Used: E-liquid B (AFNOR D90-300-3)

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2. Metals (Al, Cr, Fe, Ni, Sn) Content(s)

Method: The vapor was passed through a dry-ice cooled impinger containing glass packing beads and quartz wool. After smoking the impinger was extracted with 5% nitric acid and filtered through quartz wool. An aliquot of the resulting solution was submitted for analysis by ICP-OES.

Unit: ug/100puffs

Test Items	Al	Cr	Fe	Ni	Sn
CAS No.	7429-90-5	7440-47-3	7439-89-6	7440-02-0	7440-31-5
MDL	0.025	0.005	0.005	0.025	0.25
LOQ	0.25	0.05	0.05	0.25	2.5
Sample Description	Result				
VFIRE	ND	ND	ND	ND	ND

- Note:
- ug = Microgram
 - ND = Not Detected (lower than MDL)
 - MDL = Method Detection Limit
 - LOQ = Limit of Quantity
 - Al = Aluminium, Cr = Chromium, Fe = Iron, Ni = Nickel, Sn = Tin
 - E-Liquid Used: E-liquid B (AFNOR D90-300-3)

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3. Nicotine Consistency Test

Test Condition:

With reference to the CORESTA RECOMMENDED METHOD N° 81 method parameter and Afnor standardization XP D90-300-3, a smoke machine was used to collect the vapor.

Puff Duration	3.0s±0.1s
Puff Volume	55mL±0.3mL
Puff of Each Group	20
Maximum Flow	18.5mL/s±1.0mL/s
Pressure Drop	< 50hPa

The temperature and relative humidity of the test atmosphere during machine preparation and testing shall be kept within the following limits: temperature $\pm 2^{\circ}\text{C}$, relative humidity $\pm 5\%$

Method: A reference liquid was prepared. A pharmaceutical nicotine inhaler was used as a comparator. Products were attached to a smoke machine, and the aerosol was collected in cambridge filter pads. After collection, the pads were stored in proper condition. The cartomizers were weighed with a precision scale before and after the aerosol collection. Batteries were charged fully before use. According to in house-method, for different cartomizers, several puffing patterns was used. Power levels were chosen based on retailers, manufacturer or client's requirement.

Sample Description	Nicotine(CAS No.:54-11-5) Contents(mg / 20 Puffs)						Total(mg/ 100puffs)
	Group 1*	Group 2	Group 3*	Group 4	Group 5*	AVG	
VFIRE	0.338	0.283	0.313	0.308	0.315	0.311	1.56
Deviation(%)	8.6	-	0.5	-	1.2	-	-

Note: - mg = milligram

- ND = Not Detected (lower than MDL)

- MDL = Method Detection Limit = 0.01 mg / 20 Puffs

- LOQ = Limit of Quantity = 0.1 mg / 20 Puffs

- 1group = 20 puffs

- * Values used for determination of consistency of nicotine emission

- E-Liquid Used: E-liquid A (AFNOR D90-300-3)

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Photo(s) of the sample(s)



VFIRE

***** End of Report *****

Remark: This report is considered invalidated without the Special Seal for Inspection of the TCT. This report shall not be altered, increased or deleted. The results shown in this test report refer only to the sample(s) tested. Without written approval of TCT, this test report shall not be copied except in full and published as advertisement.